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Measurements: Length, 4.85 in.; extent, 8.00; wing, 2.60; tail, 2.45; tarsus, .62; culmen, .30.

Compared with all available material the new form is clearly recognized at a glance, and with those specimens from northern California, Oregon, and Nevada, having very light underparts shaded with ochraceous, especially so.

I take pleasure in naming this peculiar bird after my generous friend Colonel John E. Thayer of Lancaster, Mass.

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## THE PTERYLOSIS OF *PODARGUS*: WITH NOTES ON THE PTERYLOGRAPHY OF THE CAPRIMULGI.

BY HUBERT LYMAN CLARK.

THROUGH the kindness of Mr. F. A. Lucas of the National Museum, a very fine alcoholic specimen of *Podargus* recently came into my hands for the study of its pterylosis. Unfortunately there is no label with it to indicate either the species or the locality. It is not likely, however, that specific variations in the pterylosis of this genus are any greater than among the other *Caprimulgi*, where they really amount to very little. Nitzsch says that the pterylosis of *Podargus gigas* is entirely like that of *Caprimulgus*, excepting the dorsal tract, but as his examination was probably of a dried skin, it is not surprising that he overlooked some very important differences. As a matter of fact the pterylosis of *Podargus* is very distinctive and shows some very interesting and important peculiarities.

The front part of the head at the base of the upper mandible is densely feathered and this tract continues backward over the crown as a broad median band. On each side of this, just above the eye, is a single very distinct row of contour feathers. The back of the head is very fully feathered and the upper cervical tract is strong, and divides into two forks which extend to the end of the shoulder blades. The dorsal tract is forked for a much greater distance than in any North American goatsucker; its two

branches are slender and nearly parallel. The humeral tracts are strongly developed and unite over the shoulder with the ventral tracts. The femoral tracts are very large and in the specimen before me consist of two very distinct parts: an outer band which runs forward from near the base of the tail, along the posterior side of the femur, and *directly across the tibia, just above the middle*, and a large patch on the femur just above this band. The latter patch is made up of about fifty short, thick and very oily feathers, as the new feathers were just appearing here. It is possible that these patches had recently been moulted, but there were no young feathers anywhere else on the bird, and I am inclined to think that in the great reduction or absence of the oil-gland, these patches furnish the oil for preening the plumage. (The examination of a few skins would soon settle this point.) There is a small but distinct pteryla on the front of the tibia. The lower cervical tract is narrow and forked far up on the throat. On the chin the feathering is confined to about five somewhat separated rows, which form a longitudinal band with convex sides in the middle of the infra-mandibular space. The ventral tracts are wide on the breast but narrow on the belly, and are connected with the hypopterygium by a very large and evident 'hook' of feathers, on the sides. The oil-gland is entirely wanting in the specimen before me. The feet are feathered only to the tarsal joint. The filoplumes are very long and slender. There is no true down. The aftershaft is reduced to a mere scale only about 1 mm. long and bearing no barbs, but the barbs of the two sides of the feather meet at its base. There are no rictal bristles. The rectrices are 10 in number, the middle pair longest, the outer shortest. The alula contains 4 feathers. The wing is aquincubital and there are 14 secondaries. The primaries are 10 in number, of which the sixth, seventh and eighth are longest. Nitzsch gives only 21 remiges to *Podargus*, but there are clearly 24 in the specimen before me.

Just before Mr. Lucas sent me *Podargus*, a very good male Chuck-wills-widow (*Antrostomus carolinensis*) came into my possession, and the examination of its pterylosis proved of considerable interest. It differs very decidedly from that of the Whip-poorwill, quite as much so as from any of the North American

Caprimulgi. There are ten longitudinal rows on the crown and their arrangement is somewhat as in *Nyctidromus*. The pterylosis of the head, however, differs from that of all other North American genera in the much greater density of feathering on the front and sides of the forehead, and on the back of the crown. The median band on the front of the crown is also broader and denser than in the smaller Caprimulgi. The row of pinnate rictal bristles is very prominent. The upper cervical tract forks very widely: the branches are narrow and are indistinctly connected with the ends of the humeral tracts. The dorsal tract is deeply forked anteriorly and well-defined. It is also forked at the base of the oil-gland, so that there is a distinct apterium there, as in some of the owls. The femoral tracts are rather large but are entirely confined to the femurs. The ventral tracts are broad on the breast and narrow gradually on the belly, each longitudinal row being successively shorter, beginning with the innermost. The 'hook' connecting this tract with the hypopterum is very prominent. The feathering of the infra-mandibular region is very sparse, consisting of 9 longitudinal rows. The tarsus is feathered nearly to the toes in front. Aftershafts are large, the oil-gland is bare, the filoplumes are long and down feathers are wanting. There are 10 rectrices, of which the middle pair are longest. There are 10 primaries (8, 7, 9, 6, 5, 4, 3, 10, 2, 1), 14 secondaries and 3 feathers in the alula. The wing is aquincubital. Judged from the pterylosis alone, there is no justification for uniting the Chuck-wills-widow and the Whip-poorwill in the same genus, for they differ quite as markedly as any other two American genera. We may therefore refer the former to *Antrostomus* and the latter to *Caprimulgus*, though it may be the European species of *Caprimulgus* do not agree with it in detail. It is impossible to determine from Nitzsch's figure.

*Podargus* and *Antrostomus* are much larger than any of the American genera which have been examined hitherto and several of their peculiarities (as for example the large number of secondaries) are doubtless due to their greater size. But in most, if not all of the points in which they differ from other Caprimulgi, they seem to approach the owls, and thus confirm the opinion which I expressed in 1894 (Proc. U. S. Nat. Mus., Vol. XVII, p. 572) that, judged by their pterylography, "the Caprimulgi are related

to the Striges and not very distantly either." This intermediate position of *Antrostomus* and *Podargus* will be made more evident by the following table (Table A) in which the characters of these two genera are contrasted with those of the other North American Caprimulgi and the Owls. The characters in which all these groups agree, as the absence of down, the aquincubital wing, etc., have purposely been omitted from this table.

It will readily be seen that with the exception of the sternal tracts and the number of primaries, no sharp line can be drawn pterylographically between the Caprimulgi and the Striges, *Antrostomus* and *Podargus* furnishing just such intermediate characters as might be expected from their size and habits. As there are still many interesting genera to be examined, even these two differences may prove to be inconstant, and the accumulated evidence thus confirms the view that Goatsuckers and Owls are near relatives.

Nitzsch says that the pterylography of the Caprimulgidæ is very close to that of *Cypselus* but he must have expected to find a resemblance or it never would have occurred to him. Thanks again to Mr. Lucas, I have had the opportunity of examining the pterylography of ten species of Swifts. The different genera resemble each other very closely but I find very few important resemblances between the Cypseli and Caprimulgi and some striking differences. Indeed the general pattern of the pterylosis is strikingly different and there seems to be no connecting links. The contrast will be made clear by the table (Table B).

A full report on the pterylography of the swifts is in preparation; the only reason for referring to it here is to emphasize the fact that the nearest relatives of the Caprimulgi are not to be sought among the so-called Cypseliformes or Macrochires, but much more probably among the nocturnal birds of prey.

TABLE A.

	Median Band on Crown	Feathering of Fore-head.	Sternal Tracts.	'Hooks' on Sides.	Femoral Tract.	Tibial Tracts.	Apertum in front of oil-gland.	Feathering of Tarsus.	Rictal Bristles.	No. of Primaries.	Longest Primaries.	No. of Secondaries.	No. of Alula Feathers.	No. of Rectrices.	After-shafts.
North American Caprimulgi . .	Narrow.	Sparse.	Single, broad.	Weak.	Clearly marked; confined to femur.	Wanting.	Wanting.	Partial or none.	Simple, usually present.	10.	8, 9, 7, and 10.	12-13.	3.	10.	Present.
Antrostomus . .	Rather narrow.	Rather dense.	do.	Rather strong.	do.	do.	Present.	Considerable.	Pinnate.	10.	8, 7, 9, and 6.	14.	3.	10.	do.
Podargus . . .	Rather broad.	Dense.	do	Strong.	In 2 parts; lower crosses tibia.	Present.	Wanting	None.	Wanting	10.	6, 7, 8, and 5.	14.	4.	10.	Practically wanting.
American Striges	Broad.	Very dense.	Separate from and overlapping ventrals, narrow.	do.	Strong; crosses tibia.	Sometimes present.	Present.	Very considerable.	do.	11.	6, 7, 8, and 5 or 9, 8, 7, and 10.	13-16.	4.	10-12.	Wanting.

TABLE B.

	Pterylosis of Crown.	Nuchal Apertum.	Upper Cervical Tract.	Humeral and Femoral.	Sternales and Ventrals.	Condition of Wing.	Longest Primaries.	No. of Secondaries.	No. of Alula Feathers.
Caprimulgi.	Sparse; in longitudinal rows.	Wanting.	Narrow, forked, separate from dorsal tract.	Completely separate.	Broad; narrowing posteriorly.	Aquincubital.	Usually 8, 9, and 7; rarely 6, 7, and 8, or 10, 9, and 8.	12-14.	3-4.
Cypseli.	Dense; no longitudinal rows.	Present.	Broad: united with dorsal tract.	Clearly united.	Rather broad; narrowed at each end.	Quincubital or Aquincubital.	10, 9, and 8.	8-11.	2-3.

The groups agree in having 10 primaries, 10 rectrices, a bare oil-gland, an aftershaft, and no down.